

What is claimed is:

1. A suspension system for suspending an endless track
beneath a tracked vehicle chassis, the suspension system comprising:
at least one elongated suspension rail having a front portion, a rear
5 portion and a bottom track engaging portion;
at least one suspension arm having an upper end adapted for pivotal
connection to the vehicle chassis and a lower end pivotally connected to the
suspension rail;
a biasing mechanism adapted to provide a biasing force that biases
10 the suspension rail away from the vehicle chassis;
at least one rear wheel coupled proximate a rear portion of the
suspension rail; and
a track tensioning system that displaces the rear wheel relative to
the suspension rail to apply a tensioning force to the endless track in response to
15 displacement of the suspension arm.
2. The suspension system of claim 1 wherein the rear wheel is
pivotally engaged with the rear portion of the suspension rail.
- 20 3. The suspension system of claim 1 wherein the rear wheel is
slidingly engaged with the rear portion of the suspension rail.
4. The suspension system of claim 1 comprising at least one
connector arm coupling the suspension arm to the rear wheel.
- 25 5. The suspension system of claim 1 wherein the rear wheel is
displaced along a horizontal slot in the suspension rail.

6. The suspension system of claim 1 wherein the rear wheel is displaced along a curvilinear slot in the suspension rail.

7. The suspension system of claim 1 wherein the track
5 tensioning system comprises an axle slidingly engaged with the rear portion of the suspension rail, the rear wheel rotatably mounted to the axle.

8. The suspension system of claim 7 wherein the axle slidingly engages with a horizontal slot in the suspension rail.

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9. The suspension system of claim 7 wherein the axle slidingly engages with a curvilinear slot in the suspension rail.

10. The suspension system of claim 1 wherein the rear wheel is
15 coupled to a sliding member on the rear portion of the suspension rail.

11. The suspension system of claim 10 wherein the sliding member includes a static track tensioning assembly.

12. The suspension system of claim 10 wherein a connector arm
20 coupling the rear wheel to the sliding member comprises an elastic portion.

13. The suspension system of claim 1 wherein the track tensioning system is coupled to the suspension arm by an elastic member.

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14. The suspension system of claim 1 wherein the suspension arm and the suspension rail comprise one or a fully coupled, a partially coupled, or a non-coupled suspension system.

15. The suspension system of claim 1 wherein the suspension arm comprises a front suspension arm and a rear suspension arm, the track tensioning system being coupled to the rear suspension arm.

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16. The suspension system of claim 1 wherein the suspension arm comprises a front suspension arm and a rear suspension arm, the track tensioning system being coupled to the front suspension arm.

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17. The suspension system of claim 1 wherein the tensioning force generates a supplemental force transmitted by the endless track that augments the biasing force of the biasing mechanism.

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18. The suspension system of claim 17 wherein the supplemental force comprises a compressive force on the suspension system.

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19. The suspension system of claim 17 wherein the supplemental force comprises a compressive force that resists an increase in perimeter length of the suspension system during suspension displacement.

20. The suspension system of claim 1 wherein the tensioning system decreases the tensioning force on the track in response to a decrease in perimeter length during suspension displacement.

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21. The suspension system of claim 1 wherein the track tensioning system applies a tensioning force to the endless track in response to a displacement of the rear portion of the suspension rail greater than a displacement

of a front portion of the suspension rail, the tensioning force generating a supplemental force that augments the biasing force of the biasing mechanism.

22. The suspension system of claim 1 wherein the track
5 tensioning system applies a tensioning force to the endless track in response to a G-bump on the suspension rail, the tensioning force generating a supplemental force that augments the biasing force of the biasing mechanism.

23. The suspension system of claim 1 wherein the track
10 tensioning system applies a tensioning force to the endless track in response to a tail-bump on the suspension rail, the tensioning force generating a supplemental force that augments the biasing force of the biasing mechanism.

24. The suspension system of claim 1 wherein the track
15 tensioning system increases a perimeter length of the suspension system in response to displacement of the suspension arm, the increase in perimeter length generating a supplemental force transmitted by the endless track that augments the biasing force of the biasing mechanism.

20 25. A suspension system for suspending an endless track beneath a tracked vehicle chassis, the suspension system comprising:
at least one elongated suspension rail having a front portion, a rear portion and a bottom track engaging portion;
at least one suspension arm having an upper end adapted for pivotal
25 connection to the vehicle chassis and a lower end pivotally connected to the suspension rail;
a biasing mechanism adapted to provide a biasing force that biases the suspension rail away from the vehicle chassis;

at least one rear wheel coupled proximate a rear portion of the suspension rail; and

a track tensioning system that displaces the rear wheel relative to the suspension rail to apply a tensioning force to the endless track in response to
5 displacement of the suspension rail relative to the vehicle chassis.

26. A method of operating a suspension system for an endless track beneath a tracked vehicle chassis, comprising the steps of:

pivotally attaching an upper end of at least one suspension arm to
10 the vehicle chassis and pivotally attaching a lower end of the at least one suspension arm to a suspension rail;

applying a biasing force on the suspension system that biases the suspension rail away from the vehicle chassis;

coupling at least one rear wheel proximate a rear portion of the
15 suspension rail; and

displacing the rear wheel relative to the suspension rail in response to displacement of the suspension rail relative to the vehicle chassis to apply a tensioning force to the endless track.

20 27. The method of claim 26 comprising pivotally engaging the rear wheel to the suspension rail.

28. The method of claim 26 comprising slidably engaging the rear wheel to the suspension rail.

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29. The method of claim 26 comprising coupling the suspension arm to the rear wheel with at least one connector arm.

30. The method of claim 26 comprising displacing the rear wheel along a horizontal slot in the suspension rail.

5 31. The method of claim 26 comprising displacing the rear wheel along a curvilinear slot in the suspension rail.

32. The method of claim 26 comprising rotatably mounting the rear wheel on an axle and slidingly engaging the axle with the rear portion of the suspension rail.

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33. The method of claim 26 comprising coupling the rear wheel to a sliding member on the rear portion of the suspension rail.

15 34. The method of claim 26 comprising elastically coupling the rear wheel with a sliding member on the rear portion of the suspension rail.

35. The method of claim 26 comprising coupling the rear wheel to a rear suspension arm.

20 36. The method of claim 26 comprising coupling the rear wheel to a front suspension arm.

37. The method of claim 26 comprising generating a supplemental force transmitted by the endless track that augments the biasing force of the biasing mechanism.

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38. The method of claim 37 wherein the supplemental force comprises a compressive force on the suspension system.

39. The method of claim 37 wherein the supplemental force comprises a compressive force that resists an increase in perimeter length of the suspension system during suspension displacement.

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